

CLAIMS

1. System for programming a household appliance (1) having an electronic control, of the type being able to execute a plurality of programs for the control of the realization of a group of treatment operations of the items onto which the action of the appliance (1) is directed, said appliance (1) having a control system comprising:

- 5 - a microcontroller (MP),
- memory means (ME1, ME2, M3) associated to said microcontroller (MP), wherein first information are stored before the manufacturing stage of the appliance has ended, said first information being used by the control system to execute a given number of first programs of the appliance (1), said first programs allowing the immediate use of the appliance (1) once the manufacturing of the same has been completed,
- 10 - means (IN) for interfacing said control system to external electronic programming devices (10),
- a control panel (2) residing on the appliance (1), for the selection and the control of the execution of said first programs,

15 characterized in that:

- a first part (ME1, ME2) of said memory means (ME1, ME2, M3) results in being write-protected after said first information have been stored therein during the manufacturing of the appliance,
- 20 - a second part (M3) of said memory means (ME1, ME2, M3) is provided for the storage of second information, once the appliance (1) has been marketed and/or or installed at a user's premises and by means of an external programming device (10), said second information allowing the control system to execute second programs which are additional and different with respect to said first programs,
- 25 - said control panel (2) residing on the appliance (1) allows for selecting and commanding the execution of said second programs in addition to said first programs,

where said second part (M3) of said memory means (ME1, ME2, M3) is of the writable and erasable type and said second information are encoded and stored therein for an undetermined time, until a possible subsequent modification or cancellation is carried out through said external programming device (10), at the user's desire.

30 2. System, according claim 1, characterized in that means are provided for preventing the storage within said second part (M3) of said memory means

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(ME1,ME2,M3) of information which might lead to unsatisfactory results or performance of said appliance (1).

3. System, according to the claim 1, characterized in that said first information relate to the subdivision of said programs into various treatment phases, where each one of said phases is in turn characterized by determined values of control parameters of internal devices or actuators (A1-A5) of the appliance.

4. System, according to claim 3, characterized in that at least a part said first information relates to the values of said control parameters characterizing the various phases into which said first programs are subdivided.

10 5. System, according to claim 3, characterized in that at least a part said second information relates to the values of said control parameters characterizing the various phases into which said second programs are subdivided.

15 6. System, according to claim 3, characterized in that said first and/or second information comprise the duration of each of said phases, a temperature value being characteristic for said phase, the configuration and/or the mode of operation which the internal devices or actuators (A1-A5) of the appliance (1) must have during that phase.

7. System, according to claim 1, characterized in that said first and/or second information comprise data for identifying in an univocal way a determined program which can be executed by the appliance (1).

20 8. System, according to claim 7, characterized in that the data identifying a program comprise an order number.

9. System, according to claim 7, characterized in that the data identifying a program comprise a name in alphabetical and/or numerical and/or graphic characters.

25 10. System, according to claim 7, characterized in that the data identifying a program comprise numerical information and alphabetical or alphanumerical information.

11. System, according to claim 1, characterized in that said first part (ME1,ME2) of said memory means (M1,M2,M3) comprises at least a part of the program memory of said microcontroller (MP).

30 12. System, according to claim 1, characterized in that said first part (ME1,ME2) of said memory means (M1,M2,M3) comprise a memory of the ROM type.

13. System, according to claim 1, characterized in that said second part (M3) of said memory means (M1,M2,M3) comprise a memory of the EEPROM type.

14. System, according claim 1, characterized in that said external programming device is a Personal Computer (10).

15. System, according to claim 1, characterized in that means are provided for executing, under the direct control of said external programming device (10), one of said second programs.

16. System, according to claim 1, characterized in that means are provided for using the control system of said appliance (1) as an executor of controls coming from said external programming device (10), said appliance (1) behaving like a simple peripheral connected to said external programming device (10).

17. Household appliance, for the use in the system according to one or more of claims 1 to 16, having an electronic control system comprising:

- a microcontroller (MP),
- first memory means (ME1, ME2), associated to said microcontroller (MP), being write-protected for inhibiting the modification of said first information relating to said first programs,
- second memory means (ME3), associated to said microcontroller (MP), being writable and erasable for allowing the storage, and/or the modification thereof, of said second information relating to said second programs,
- interface means (IN) for connecting said control system (MP, ME1, ME2, ME3) to said external programming device (10).
- a control panel (2) residing on the appliance (1), for the selection and the control of the execution of either said first programs and said second programs.

18. Household appliance, according to claim 17, characterized in that it is a cooking oven (1).

19. Household appliance, according to claim 17, characterized in that it is a washing machine.

20. Household appliance, according to claim 17, characterized in that said interface means (IN) comprise a serial port.

21. Household appliance, according claim 17, characterized in that said interface means (IN) comprise an adapter for connecting said control system to a home bus, in particular a power line carrier bus.

22. Household appliance, according claim 17, characterized in that said control

panel (2) comprises a display device (6).

23. Household appliance, according to claim 22, characterized in that means (5) are provided for enabling the sequential displaying on said display device (6) of data identifying said programs.

5 24. Method for programming a household appliance (1) having an electronic control system (MP,M1,M2,M3), of the type being able to execute a plurality of programs, comprising the step of:

- storing first information into said control system (MP,M1,M2,M3), during the manufacturing stage of the appliance (1), said first information being used by the control system (MP,M1,M2,M3) to control the execution of a given number of first programs of the appliance (1), said first programs allowing the immediate use of the appliance (1) once the manufacturing of the same has been completed,
- providing the appliance (1) with control means (2) which allow for the selection and the command of the execution of said first programs,

15 characterized in that the following steps are further provided:

- a) protecting said first information, for inhibiting their modification after they have been stored into said control system (MP,M1,M2,M3);
- b) after the appliance (1) has been marketed or installed at a user's premises, interfacing said control system (MP,M1,M2,M3) to an external programming device (10),
- 20 c) obtaining, through said external programming device (10), second information for allowing said control system (MP,M1,M2,M3) to execute second programs being different with respect to said first programs,
- d) storing said second information, by means of said external programming device (10), into said control system (MP,M1,M2,M3), for adding said second programs to said first programs,
- 25 e) selecting and commanding the execution of said second programs through said control means (2),
- f) modifying or deleting said second information, through said external programming device (10), should the necessity arise for the user.

30 25. Method, according to claim 24, comprising, at least after step b) has been carried out, the step of reading out said first and/or second information from said control system (MP,ME1,ME2,M3), by means of said external programming device (10).

26. Method, according to claim 25, characterized by
modifying, by means of said external programming device (10), the first information
read out,

5 - storing the relevant modified information within said control system
(MP,M1,M2,ME3), pairing said modified information with identifying data which are
different from the ones being assigned to the first program of origin.

27. Method, according to claim 24, characterized by, at least after step b) has been
carried out, establishing a connection between said external programming device (10), and
a remote system, in particular an Internet site, through a communication line (RT).

10 28. Method, according to claim 27, characterized by downloading said second
information from said remote system, for their subsequent storage within said control
system (MP,M1,M2,ME3), through said external programming device (10).

29. Method, according to claim 27, characterized by sending said second
information to said remote system, through said external programming device (10)

15 30. Method, according to claim 29, characterized by loading said second
information contained in said control system (MP,M1,M2,ME3) into a memory of said
external programming device (10), and sending them to said remote system.

20 31. A programming user interface, for the use in the method according to one or
more of claims 24 to 30, said user interface being included in said external programming
device (10) and comprising

- display means (II,III,IV),
- means for editing said second programs,
- means for realizing the likely storage of the second information relating to the edited
programs within said control system (MP,M1,M2,ME3),

25 said means for editing said second programs being programmed for displaying onto said
display means (II,III,IV) the subdivision of a program to be edited into various treatment
phases and the values, for each of said phases, of control parameters of internal devices or
actuators (A1-A5) of the appliance (1).

30 32. User interface, according to claim 31, characterized in that said means for
editing are programmed for displaying said control parameters in a graphic form onto said
display means (II,III,IV).

33. User interface, according to claim 31, characterized in that said means for

editing are programmed for entering and displaying onto said display means (II,III,IV) data identifying a selected program to be edited.

34. User interface, according to claim 31, characterized in that said means for editing comprises means for selecting a phase of interest among the phases into which a program to be edited is subdivided and/or displaying at least some of said control parameters relating to such a phase.

35. User interface, according to claim 31, characterized in that said means for editing comprises means for generating and representing a Cartesian plane onto said display means (II,III,IV), said Cartesian plane showing, on the abscissa, the duration of the various phases forming the program to be edited, and on the ordinates, another parameter relating to said phases, in particular a temperature value.

36. User interface, according to claim 31, characterized in that said means for editing comprises means for suppressing at least one of the phase into which the program to be edited is subdivided.

37. User interface, according to claim 31, characterized in that means are provided for displaying in a real time onto said display means (II,III,IV) information concerning the progress status of a program being running on said appliance (1).

38. User interface, according to claim 31, characterized in that said program to be edited is a cooking program for a oven and said control parameters comprises:

- the duration of a selected phase, and/or
- the temperature to be reached within the oven during the selected phase, and/or
- the configuration and/or operating mode of heat sources of the oven (1), and/or
- the type of ventilation of possible use during the selected phase, and/or
- the modes of a possible use of a grill heater during the selected phase.

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